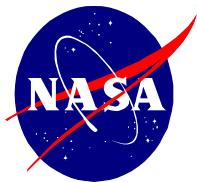


# XML - James Webb Space Telescope

Ryan Detter GSFC/NASA  
Code 584

ISD Technology Workshop

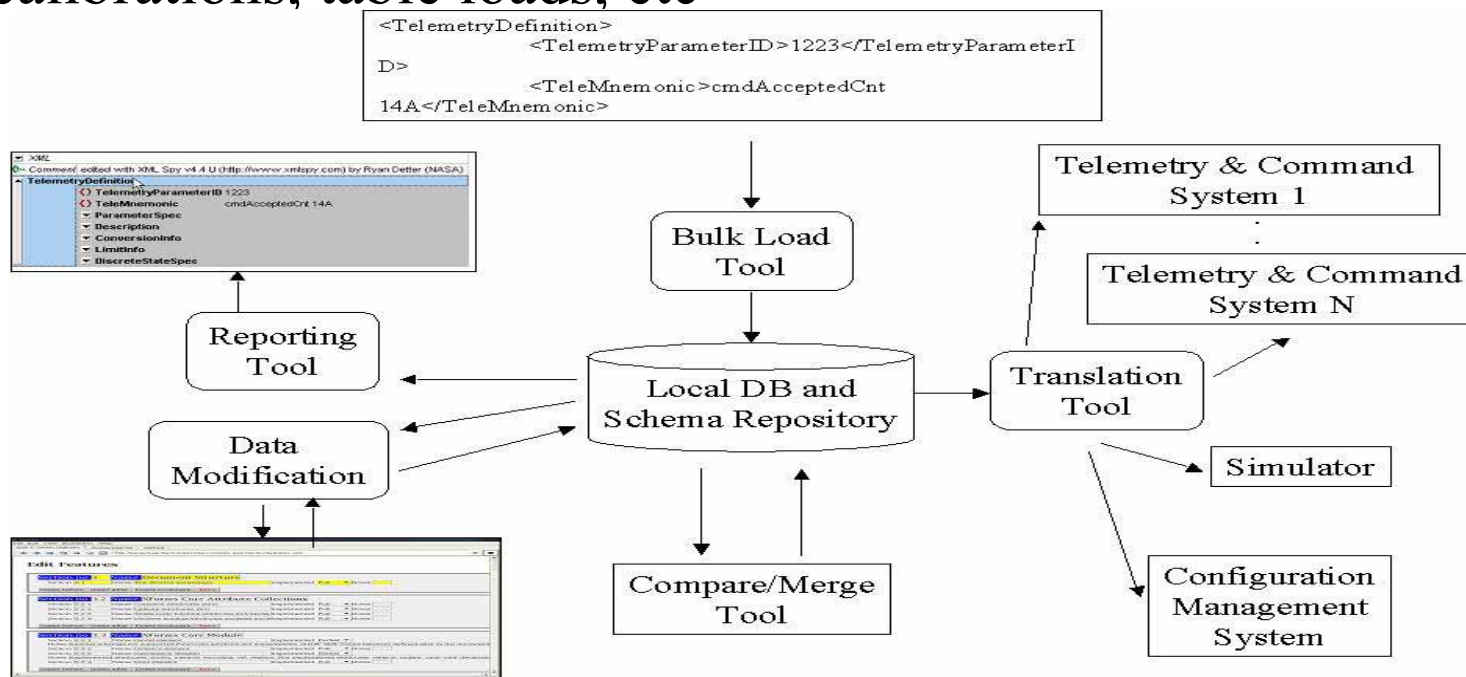


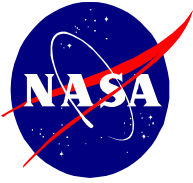


# JWST Database Goals and Objectives

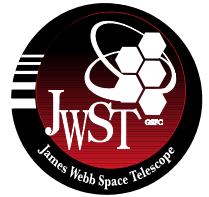


- The initial database and ground system elements will be used for 19 years, plus post mission activities.
- Planned for 10-20 thousand command and telemetry items, plus many thousand other database items, pages, scripts, calibrations, table loads, etc

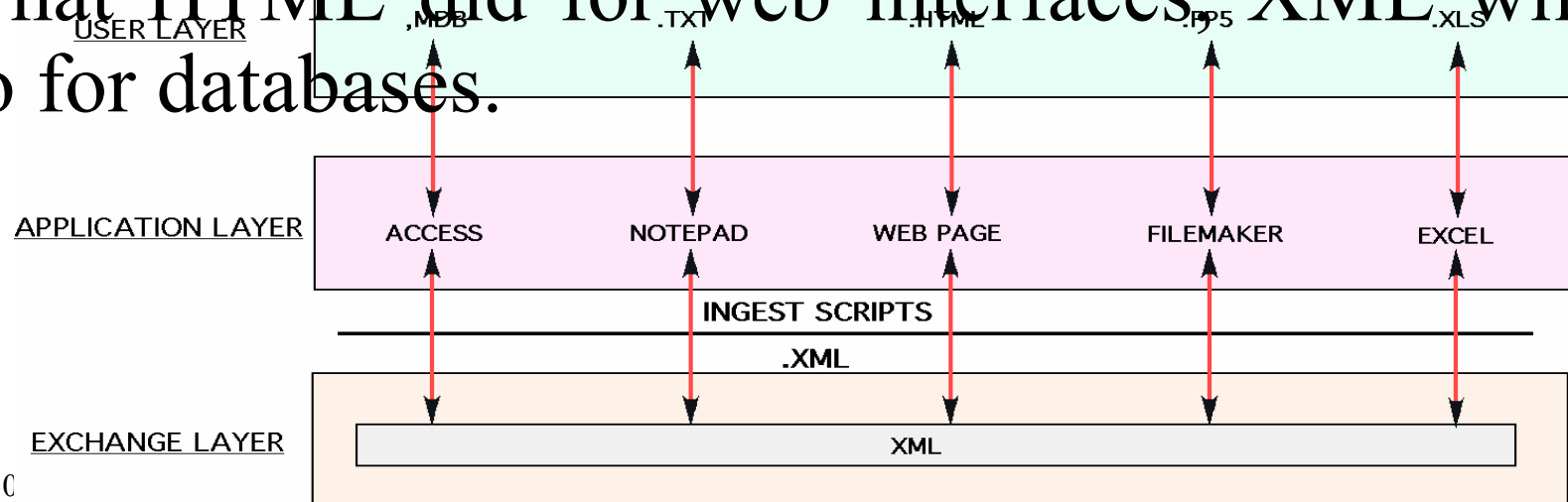


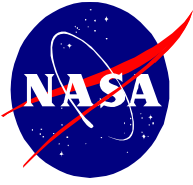


# Benefits

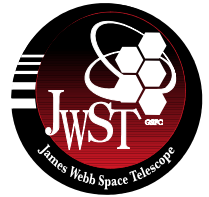


- Provide a JWST database, independent of any portion of the ground system, yet still compatible with the various systems.
- Provided the flexibility desired from a database in an infant state, and sure to evolve drastically.
- What HTML did for web interfaces, XML will do for databases.



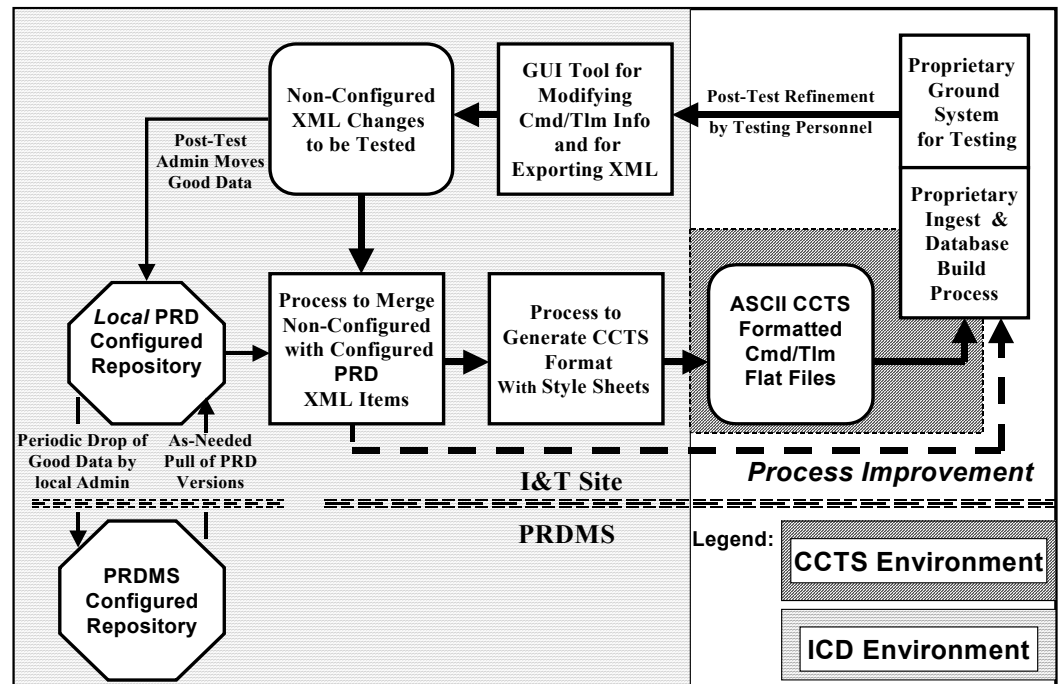


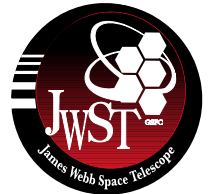
# User Database Process



- During the Integration and Test (I&T) phases of the JWST development, 24 distinct laboratories, will have local database tools with an XML database.
- Central database repository and ‘Golden Copies’ at STScI in Baltimore, Maryland.

- The main issue in this process is who constructs the translation tools from XML to custom formats.





The screenshot shows the 'Command Parameters' dialog box in the XSVLSPY application. The dialog is titled 'Command Parameters' and is divided into two columns. Each column contains a list of parameters with the following fields:

- Parameter Name: A-2
- Description: String
- Data Type: J072
- Length (Bits): 1072
- First Bit Offset: 1136
- Fixed Data Required: N
- Default Value: 0
- Minimum Value:
- Maximum Value:
- Conversion Value: NONE
- Conversion Group Identifier: ACS\_PPL\_000
- Discrete State: String
- Discrete Command: 05535

The parameters are identical in both columns. The dialog is set against a background of a schematic diagram.

The screenshot shows a web browser window titled "XMLSpy - [PKTenc.xml \*]". The browser's address bar shows a file path. The main content area has a light blue background and contains the following elements:

- A red underlined heading: **JWST Database**
- A section heading: **PACKET INFORMATION:**
- A form with three input fields:
  - Application Packet ID: 80331
  - Virtual Channel ID: 7
  - Length (Bytes): 1084
- A section heading: **PACKET DESCRIPTION:**
- A form with six input fields:
  - Pedigree: String
  - Growth Build ID: String
  - Flight Build ID: String
  - Description: String
  - Description URL: http://www.altova.com
  - Source Date: String
  - Site Number: String

At the bottom of the browser window, there is a status bar with icons for XML, XSL, and PKTenc.xml, and a text area that reads: "XMLSpy v5.0.4 (J) Registered to Ryan Geller (Space Telescope Science Institute) ©1998-2003 Altova GmbH & Altova, Inc."

# JWST Database

## TELEMETRY INFORMATION

### CORE INFORMATION

Mnemonic Name:	<input type="text" value="JCCM_AAAAAA"/>	
Mnemonic ID:	<input type="text" value="JCCM0003"/>	
Packet Elements:	Packet ID:	Packet Offset (bits):
	<input type="text" value="J131"/>	<input type="text" value="4963"/>
	<input type="text" value="J131"/>	<input type="text" value="4963"/>
Size (bits):	<input type="text" value="4964"/>	
Data Type:	<input type="text" value="UI0"/>	
Subsystem:	<input type="text" value="ACS"/>	
Units:	<input type="text" value="NONE"/>	

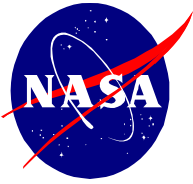
### CONVERSION SWITCHES

Conversion Set Number:	<input type="text" value="3"/>	<input type="text" value="3"/>
Telemetry Switch Mnemonic:	<input type="text" value="JCCM_AAA"/>	<input type="text" value="JCCM_AAAA"/>
Minimum Value:	<input type="text" value="0"/>	<input type="text" value="0"/>
Maximum Value:	<input type="text" value="0"/>	<input type="text" value="0"/>
Group ID:	<input type="text" value="ACS_PtPt_(((("/>	<input type="text" value="ACS_PtPt_(((("/>

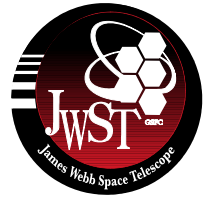
The screenshot shows the Packet Analyzer application window. The top menu bar includes File, Edit, Project, XCL, Authors, View, Grower, Tools, Window, and Help. Below the menu is a toolbar with various icons for file operations and analysis. The main window is divided into several panes:

- Project Pane (Left):** Displays a tree view of the project structure, including folders for XML, XSL, HTML, DTD, Forms, Command, and Packages. The 'Packages' folder is expanded, showing a list of packets (e.g., PKT0001.XML, PKT0002.XML, etc.).
- Packet Information Pane (Top Right):** Displays details for the selected packet (PKT0001.XML). It includes fields for Application Packet ID (0001), Virtual Channel ID, and Length (Bytes) (16).
- Packet Description Pane (Bottom Right):** Displays details for the selected packet, including Pedigree (XML from PSW Report by J), Group Build ID, Flight Build ID (C6\_09\_30\_03), Description (ICCH DefinitionDone), Description URL, Source, and Slot Number.
- Attributes Pane (Bottom Right):** Displays attributes for the selected packet, including VCD.
- Entities Pane (Bottom Right):** Displays entities for the selected packet, including entities like amp, ap, g, h, and quot.

The bottom status bar indicates the file is not valid and provides a link to the 'AUTHENTIC' browser.

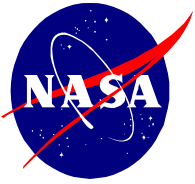


# Database Validation

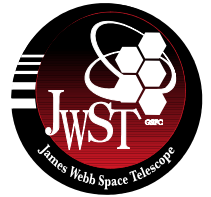


- On JWST the goal is to provide as much validation at the user interface, to reduce errors on database submittal.
- To track and create each item at the lowest level.
  - In the stylesheets

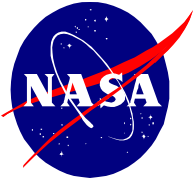
```
<xsl:for-each select="/DB/TlmUnit">
  <xsl:sort select="TlmIdentifier"/>
  <xsl:variable name="decommword">
    <xsl:value-of select="TlmCoreElements/TlmPktElements/PktOffsetInBits div 8"/>
  </xsl:variable>
  <xsl:variable name="chunkcnt" select="floor((TlmCoreElements/SizeInBits div 8) div 50)"/>
  <xsl:variable name="remainder" select="(TlmCoreElements/SizeInBits div 8) - ($chunkcnt * 50)"/>
  <xsl:call-template name="octetloop">
    <xsl:with-param name="chunkcnt" select="$chunkcnt"/>
    <xsl:with-param name="remainder" select="$remainder"/>
    <xsl:with-param name="decommword" select="$decommword"/>
  </xsl:call-template>
</xsl:for-each>
```



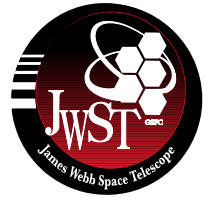
# XML Database Tools



- XML allows for easier integration with COTS than in the past because it is an international recognized standard that is implemented throughout industry.
- COTS tools currently being used are:
  - winCVS
  - CVS
  - XMLspy



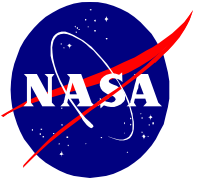
# Summary



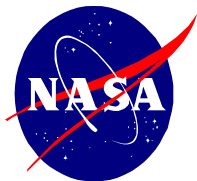
- XML is an open standard data exchange format that is compatible with many current database products
- XML is low cost since lots of COTS tools, including freeware, are available
- Users never see the XML, they did not believe this until shown
- Delivers real-time validation as developers create data items
- Translates from one standard format to many data input formats with ease



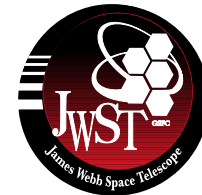




# Back-Up Slides



# Database Import



Import settings

Import settings | Import options | General | Globals

Select the module name and path on the remote server:

PRD

Initial vendor and release tags:

Vendor tag: Central

Release tag: RDEV05-001-000

Enter the log message:

Import of Central PRDDEV05-001-000 content

MovedOvertheYesNoButton - [C:\PRDDevelopment\Importable\PRD\]

File Edit View Admin Create PRDMS Modify Query Trace Macros Window Help

Import Central Version

Export in ICD Format

Assemble and Translate

PRDDemo

PRDDevelopment

CompliableCvs

cvsdevelopment

DummyProject

Exportable

Importable

Aqua

C5

C6

cvsGui

OneLevelML

OneLevelML2

PRD

PRDC61212003

MikeData

MikeIsl

Os1

Os2

PRDPrototypes

XmiSpy

Modules

Explore

CVSROOT: V:\JWSTPRDCVS (local mounted direct

Hey Frank, TCL is available, shell is enabled

JWST Central PRD Content Publication Home - Microsoft Internet Explorer provided by STScI/CPI

File Edit View Favorites Tools Help

Address: http://www.stsci.edu/prd/prolog/web/

PRDMS JWST Ground System - Central PRD Publication Site PRDMS

JWST PRD Document Home JWST Ground System Home STScI JWST Home JWST PRD Home

Operational PRD Content

File Name	Version *	Build Change Requests	PRD Release Date	Release Notes

Development PRD Content

File Name	Version *	Build Change Requests	PRD Release Date	Release Notes
PRDDEV05-001-000.zip	DEV05-001-000	CR List	09/29/2003	None
PRDDEV06-001-000.zip	DEV06-001-000	CR List	11/20/2003	None
PRDDEV06-002-000.zip	DEV06-002-000	CR List	12/12/2003	None
PRDDEV05-001-001.zip	DEV05-001-001	CR List	02/11/2004	None
PRDDEV06-002-001.zip	DEV06-002-001	CR List	02/11/2004	None

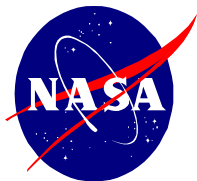
Testbed Data in PRD ICD Format

File Name	Version	Build Change Requests	PRD Release Date	Release Notes
AquaDev01-0-00.zip	Dec 2003 ICD	CR List	01/04/2004	None

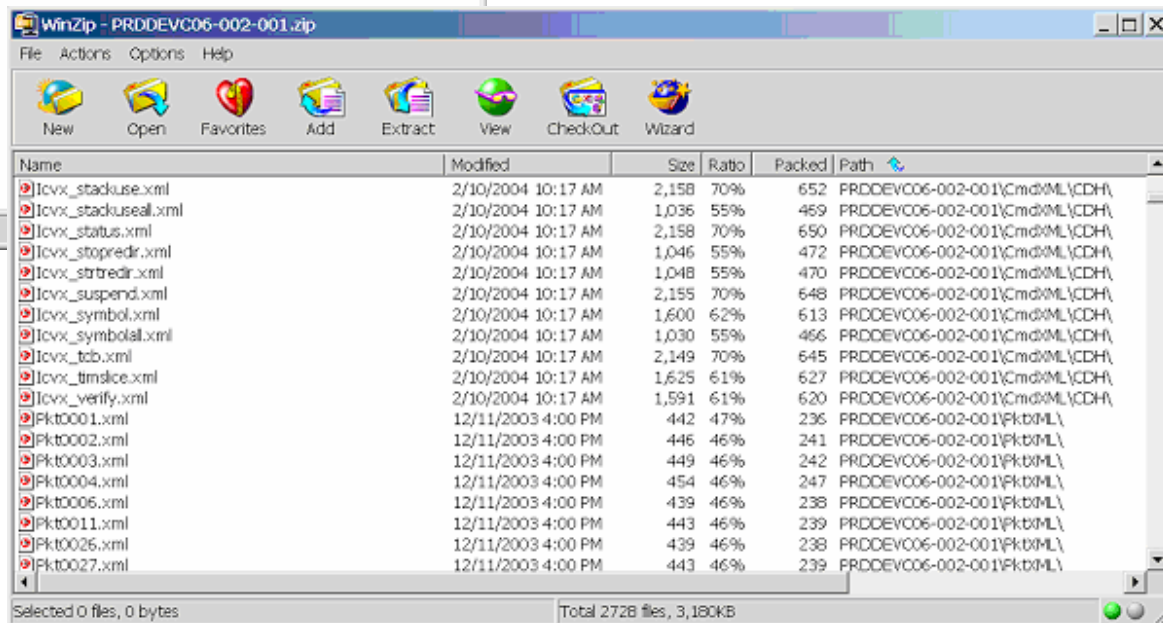
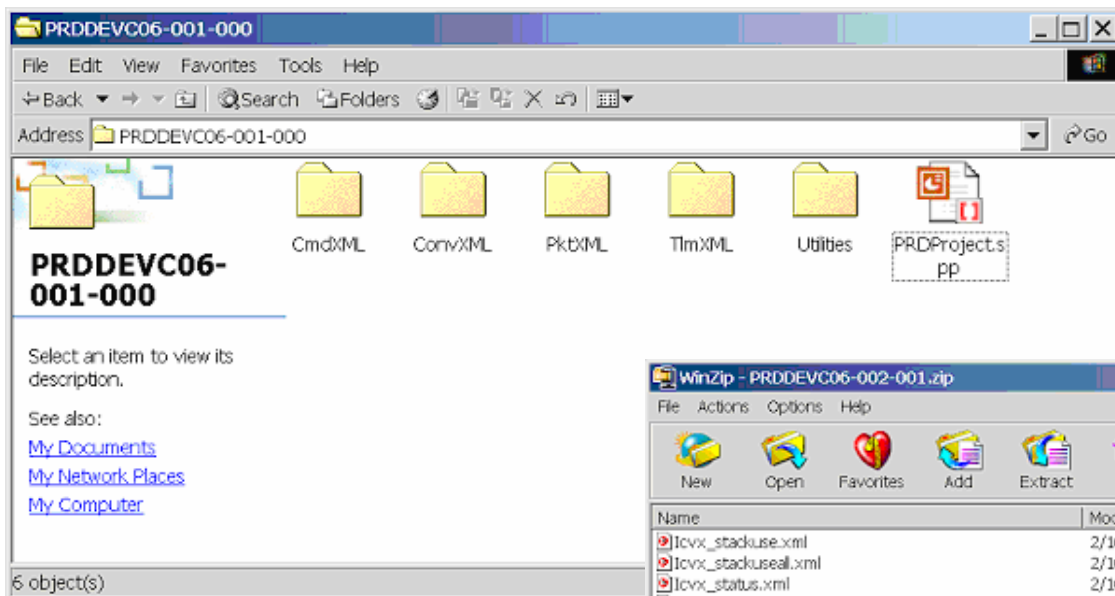
\* Note, version consists of the following:  
3-8 Character Central content status identifier  
3 digit major build identifier  
3 digit minor build identifier

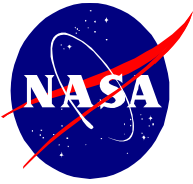
Done

Internet

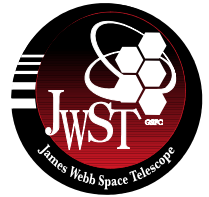


# Database XML files





# Database Validation



## – In the Schemas

